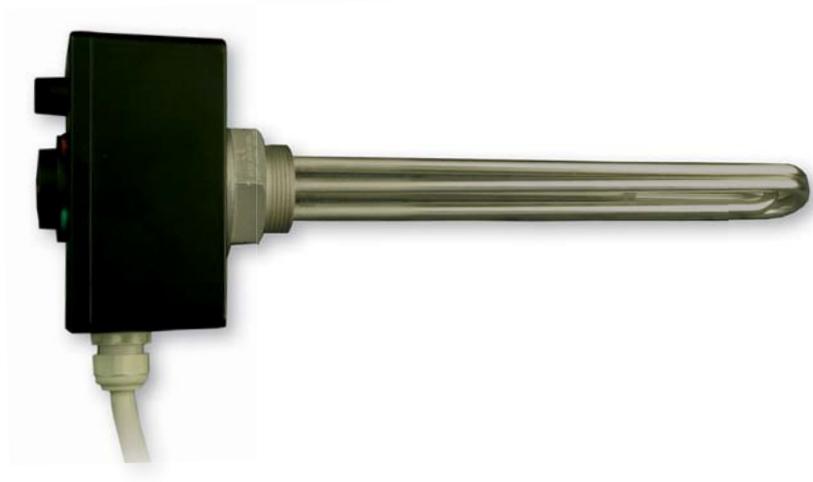


Instruction Manual

Stainless-Steel Heating Element with Thermostatic Head, 3-phase fixed wiring



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1 - In General

1.1 - Use

This electric heating element is designed to heat sanitary water in a hot water storage tank or heating water in thermal store. The heating fluid may be water or antifreeze fluid for heating systems and heat pumps. This heating element is not intended for heating other fluids, gases or vapour. It is intended for fluid heating in stainless-steel electric boilers.

1.2 - Installation

Screw the heating element into the respective threaded sleeve (G 6/4" F) with the cable gland downwards. Sealing cord, hemp, Teflon tape or a semi-permanent thread sealant should be used to avoid leaks. Should an electric heating rod be installed, plastic piping shall not be used for connecting the tank to a heating system.

1.3 - Maintenance

Clean the exterior of the heating element with a soft cloth and a suitable detergent. Never use abrasive cleaners or solvents.

If the element is used in extra hard water, it is recommended to remove sediments at least once a year. Unplug the element before cleaning. Then drain water from the tank and dismount the heating element. Scratch the hard deposits on the heating rod with a plastic or wooden spatula and flush with water. Then reinstall the body according to this instruction manual, fill the tank with water, air-bleed and pressurize it. Check the threaded connection for leaks. Finally, re-connect the heating element to the mains.

1.4 - Disposal

IMPORTANT INFORMATION ON PROPER DISPOSAL OF E-WASTE AS REQUIRED BY THE EC DIRECTIVE 2002/96/EC (WEEE)

Do not dispose of this product as unsorted municipal waste. Please dispose of this product by returning it to the point of sale or to your local municipal collection point for recycling.

Respecting these rules will help to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally.

The crossed out wheeled bin with marking bar, printed either in the Manual or on the product itself, identifies that the product must be disposed of at a recycling collection site.



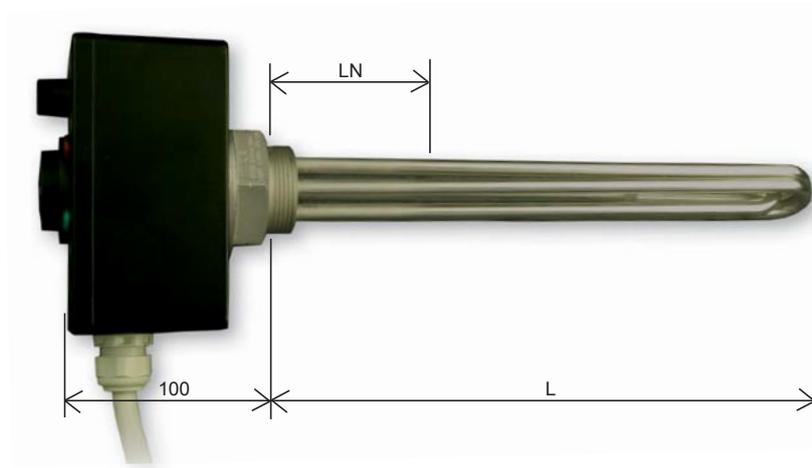
WEEE Registration Number: 02771/07-ECZ

2 - Heating Element with Thermostatic Head, 3-phase fixed wiring

2.1 - Technical Description

The electric heating element consists of a stainless-steel heating rod with G 6/4" outer thread, a capillary thermostat adjustable between 0 ± 5 °C and 90 ± 3 °C (the lower limit is factory set to 15 °C as a frost protection and the upper limit is set to 60 °C for use in hot water storage tanks) with 5 ± 1 °C switching difference, a manual reset safety capillary thermostat set to 99 °C and ± 0 °C, -6 °C tolerance, $7 \times 1,5$ mm² power supply cable and LEDs showing the state of the heating element. The power supply cable is 2 m long.

2.2 - Dimensions



	output [kW]	el. wiring	type no.	code	LN-non-heating end [mm]	L-heating rod length [mm]
3×230 V	2.0	3/N/PE AC 230 V	ETT-K-2,0	14990	100	225
3×230 V	3.0	3/N/PE AC 230 V	ETT-K-3,0	14991	100	285
3×230 V	4.5	3/N/PE AC 230 V	ETT-K-4,5	14992	100	383
3×230 V	6.0	3/N/PE AC 230 V	ETT-K-6,0	14996	100	478
3×400 V	7.5	3/N/PE AC 400 V	ETT-K-7,5	14993	100	570
3×400 V	9.0	3/N/PE AC 400 V	ETT-K-9,0	14614	100	665

2.3 - Connection to the mains

The electric heating element shall be wired to a terminal box or electrical enclosure, 3/N/PE AC 400/230V, fixed wiring. The installation shall meet valid rules and standards and shall be done by an authorized person only.

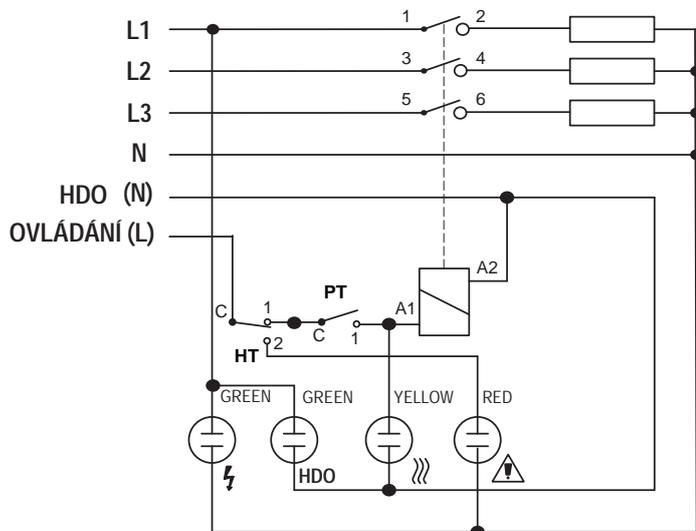
The wire marked N-HDO is intended to control the heating element with Ripple control. Should this connection remained unused, both the center blue wires (N and N-HDO) shall be joined together in the terminal box or electrical enclosure.

The wire marked OVLÁDÁNÍ (L) is intended to control the heating element with a heating system controller. This wire shall be joined with the controller-switched line. In such a case, the temperature set with the thermostat knob shall be higher than that set by the controller. Should this connection remained unused, this wire shall be joined together with the L1 line in the terminal box or electrical enclosure.

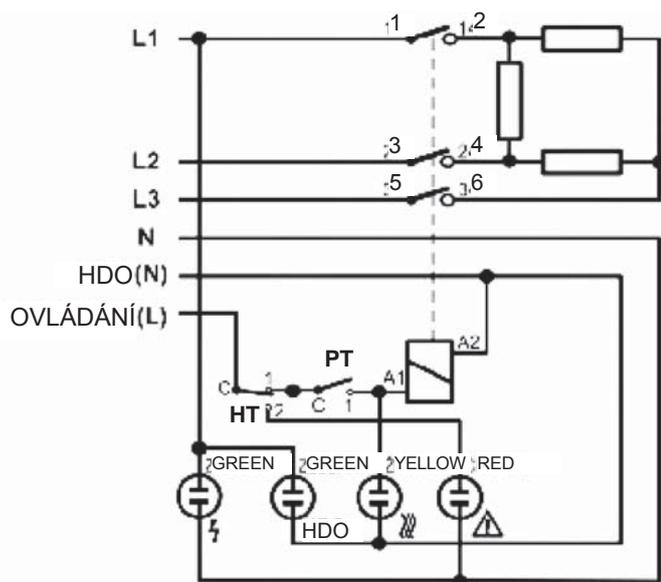
2.4 - Wiring diagram

2.4.1 - Wiring diagram for the heating element

2.4.1.1 - Heating rods 2 - 6 kW



2.4.1.2 - Heating rods 7.5 - 9 kW



2.5 - Commissioning, operation and possible faults

WARNING!

THE OUTGOING HOT WATER SHALL NOT BE LEAD THROUGH COMMON PLASTIC PIPES. THE PIPING SHALL BE RESISTANT TO TEMPERATURE OF 100 °C MIN.

IF PLAIN COMMON PLASTIC PIPING IS USED, ITS SERVICE LIFE IS SIGNIFICANTLY REDUCED UNDER TEMPERATURES OVER 60 °C. WHEN COMBINED WITH IMPROPER PIPE FIXING THAT RESTRICTS DILATATION OR EVEN MAKES IT IMPOSSIBLE, THE PIPE SERVICE LIFE MIGHT BE JUST SEVERAL HOURS!

Prior to commissioning, please make sure the water in direct contact with the heating element does not exceed the values given in the chart below. The manufacturer bears no responsibility for defects (e.g. limescale deposits on the heating element) caused by unsuitable operation conditions.

Table of limit values for total dissolved solids in hot water

Description	pH	Total dissolved solids (TDS)	Ca	Chlorides	Mg	Na	Fe
Max. value	6.5-9.5	600 mg/l	40 mg/l	100 mg/l	20 mg/l	200 mg/l	0.2 mg/l

2.5.1 - DHW heating in a storage water heater

In order to heat water in the storage water heater, open the cold water inlet, fill the tank with water and airbleed it by opening the hot-water tap. Set the thermostat knob to the desired temperature. Green and yellow LEDs will be lit on the heating element. As soon as the desired water temperature is reached, the yellow lamp will go out. The lit green LEDs show that the heating element is energized and Ripple control is on (low tariff). If the green LED marked N-HDO is out, the Ripple control is off (high tariff). In case the cable marked N-HDO is joined with the middle N cable in a terminal box, both the green LEDs will be lit and go out simultaneously, showing that the heating element is energized.

It is recommended to set the thermostat knob to 60 °C. This temperature guarantees the best operation of the heating element and at the same time, it offers:

- protection against Legionella
- cost reduction
- slower deposit formation

2.5.2 - Heating water for space heating in **a thermal store**

Fill the heating system with heat-transfer fluid, air-bleed it and pressurize to the working pressure. Set the thermostat knob to the desired temperature.

Should a temperature above 60 °C be set, the limiting spring under the knob shall be removed.

Steps:

- Pull the knob off the shaft.



- There are 2 limit springs inside the knob. Remove the upper one. It is fitted in the groove 17 and limits the adjustable temperature to 60 °C. (Just one spring will remain in the knob, fitted in the groove 37. It limits the min. adjustable temperature to 15 °C).



- Re-fit the knob on the thermostat shaft.

This modification will increase the adjustment range to 15 - 90 °C.

Green and yellow LEDs will be lit on the heating element. As soon as the desired temperature of liquid is reached, the yellow lamp will go out. The lit green LEDs show that the heating element is energized and Ripple control is on (low tariff). If the green LED marked N-HDO is out, the Ripple control is off (high tariff). In case the cable marked N-HDO is joined with the middle N cable in a terminal box, both the green LEDs will be lit and go out simultaneously, showing that the heating element is energized.

2.5.3 - Heating element state during operation

Heating element state during operation is shown as follows

Colour	Marking	Description
Green	⚡	The heating element is OK, energized and ready for operation.
Yellow	§ ON	The heating element is heating
Red	!	The safety thermostat is OFF
Green	N-HDO	Low-tariff Ripple control is active

When the safety temperature is reached, the safety thermostat will cut off the heating element from power supply. This is signalled by a red LED. The green LED on (flash sign) means the heating element is energized. The safety thermostat requires manual reset. When the tank cools down, unscrew the lid of the heating element and press the button. The red light will go out and the heating element is ready again.

NOTE: If power supply (L) is turned off and at the same time Ripple control is off, then the heating element can be energized from the controller line OVLÁDÁNÍ (L). This state is signaled by both green LEDs on.

2.5.4 - Possible faults

If the heating rod is controlled by a heating controller and the yellow LED won't get lit when the green ones are lit and the controller switches on, then probably the desired temperature set with the knob of the adjustable thermostat is lower than that set on the controller. Set the thermostat knob to a higher desired temperature. If this does not help, call your service provider.

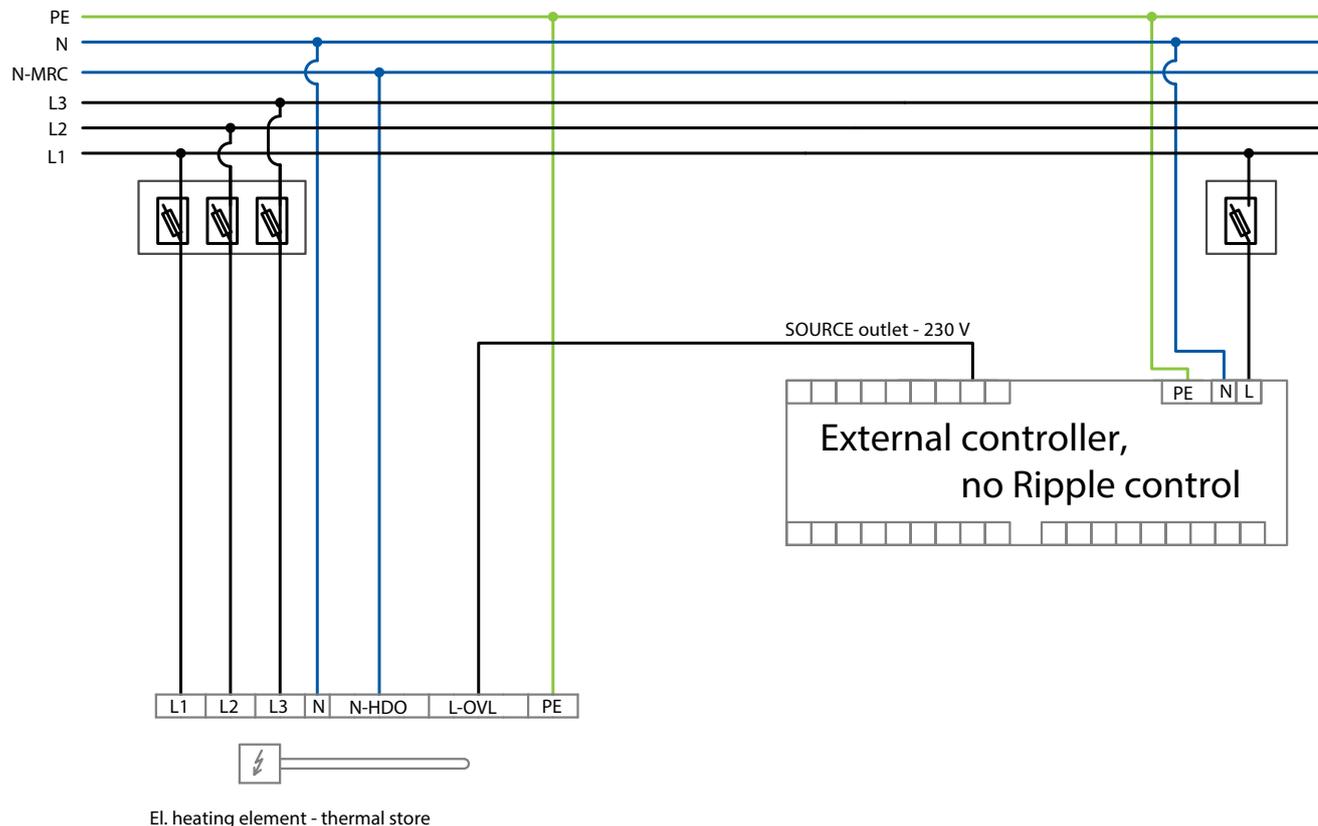
If the tank gets overheated without using any other heat source (the adjustable thermostat probably does not turn off the heating element when the set temperature is reached - the yellow LED is on until the red one lights up), call your service provider.

If the heating element shows signs of another defect (no green LED is lit or N-HDO only, although energized, or both red and yellow LEDs are lit simultaneously etc.), disconnect it from the mains immediately and call your service provider.

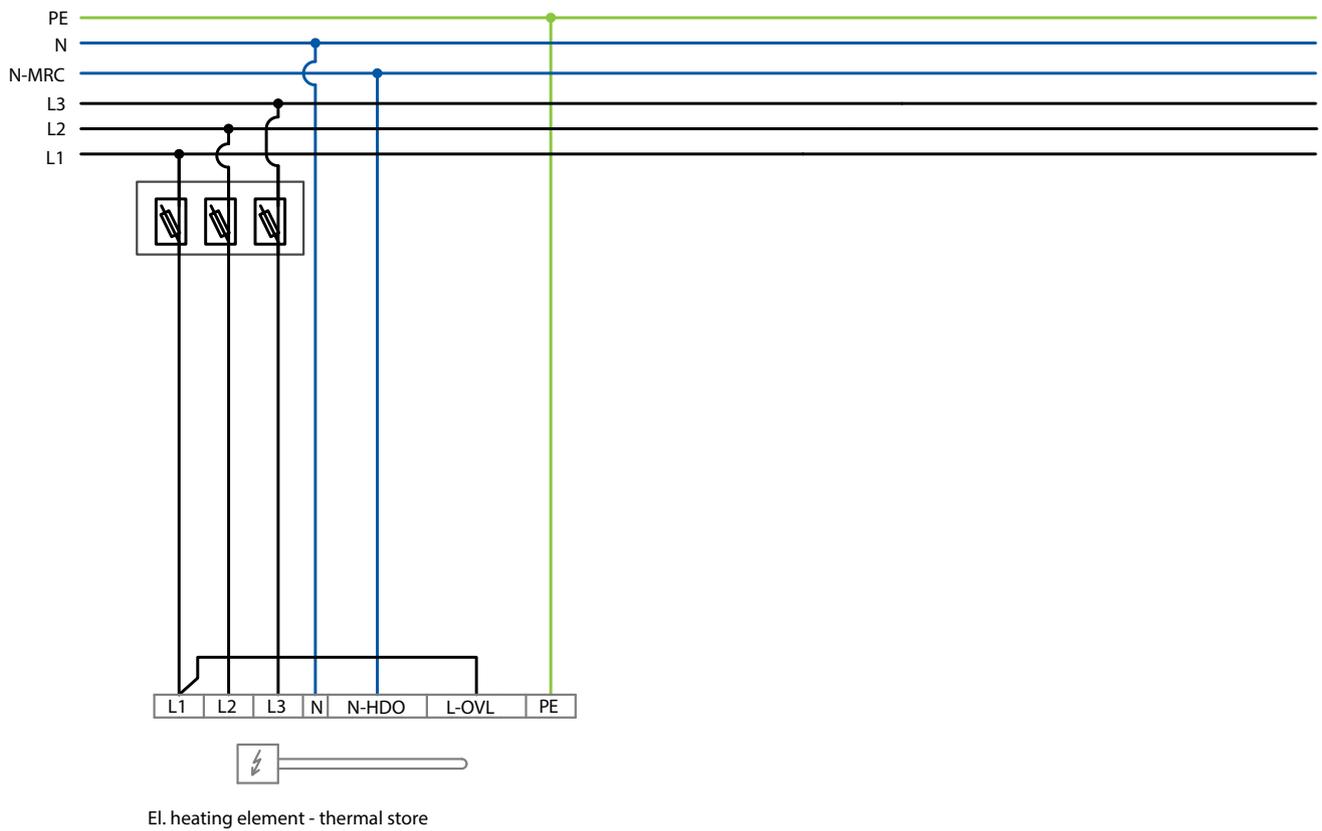
3 - Wiring examples for heating elements

controller- or thermostat-controlled

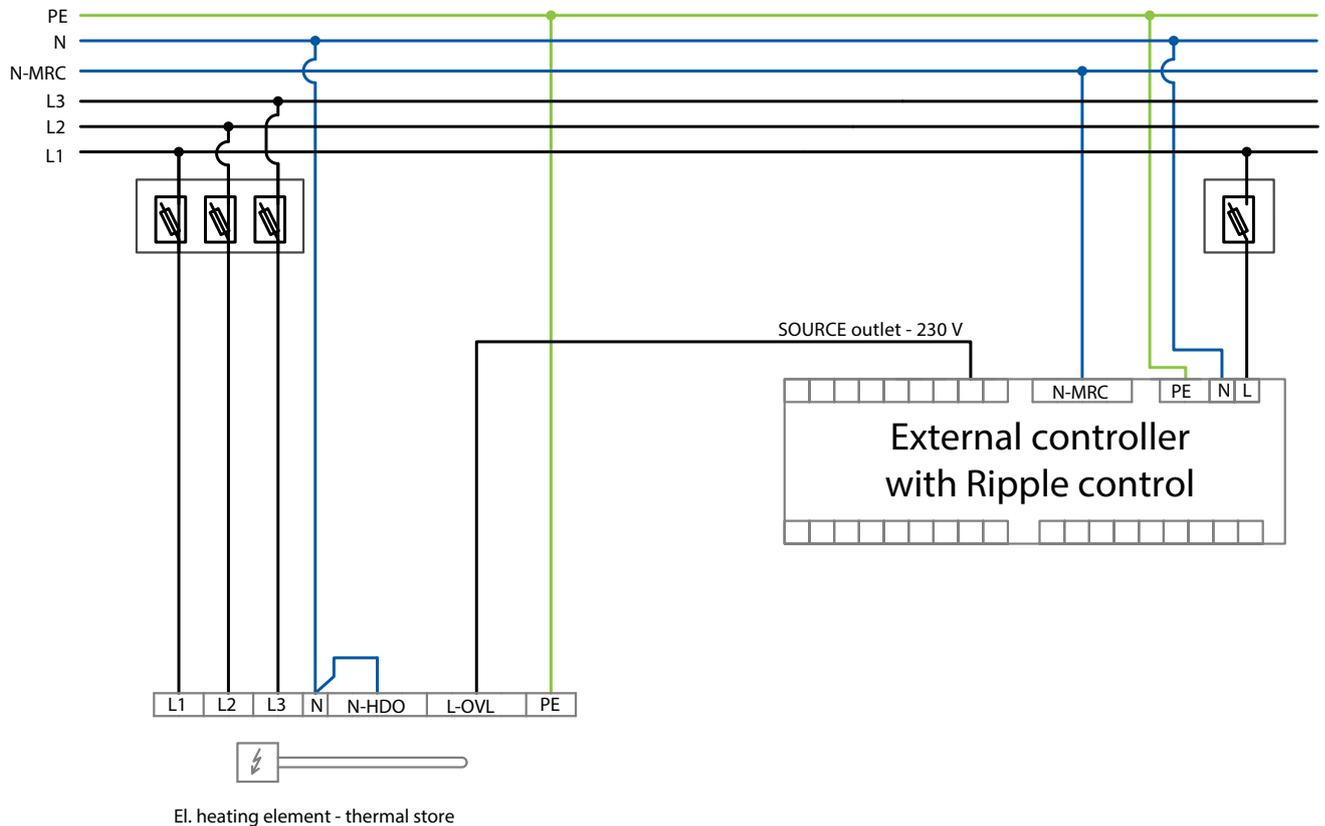
System controlled with an external controller, without Ripple control



System controlled with the integrated thermostat



System controlled with an external controller, with Ripple control



WARRANTY CERTIFICATE

Stainless-Steel Heating Element with Thermostatic Head, 3-phase fixed wiring

Type:

Serial number:

Shop:

Purchase date:

WARRANTY CONDITIONS

1. The warranty period is 24 months from the date of purchase.
2. The product will be installed and commissioned by a competent company or a person trained by the manufacturer.
3. When claiming warranty, this Warranty Certificate must be submitted together with the purchase receipt.
4. The warranty is valid only when the technical conditions set by the Manufacturer, installation manual and instructions in the documentation and on the product itself are maintained.
5. The warranty does not cover defects caused by external conditions or improper operation conditions, defects caused by usual wear and tear, further when the product is not used in compliance with its purpose and when the defect was caused by mechanical damage, improper handling, tampering by a third person, improper installation, improper stocking, natural disaster etc.

COMMISSIONING

Company:

Date:

Rubber stamp print and signature of the installer:

08/2015



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